

### Abstract

A lead-free solder alloy comprises 1.0 - 5.0 wt% Ag, 0.01 - 0.5 wt% Ni, one or both of (a) 0.001 - 0.05 wt% Co and (b) at least one of P, Ge, and Ga in a total amount of 0.001 - 0.05 wt%, and a remainder of Sn. The solder can form solder  
s bumps which have a high bonding strength and which do not undergo yellowing after soldering.